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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,148	08/01/2006	Yoshihisa Suda	1009682-000160	5044

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EXAMINER	
YANCHUK, STEPHEN J	

ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
04/16/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary	Application No.	Applicant(s)	
	10/588,148	SUDA ET AL.	
	Examiner	Art Unit	
	STEPHEN YANCHUK	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 March 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *63-144* is/are pending in the application.

4a) Of the above claim(s) *64-72,74-86 and 116-144* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *63,73 and 87-115* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/1/2006, 12/05/2006, 09/15/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

FUEL CELL AND FUEL RESERVOIR FOR FUEL CELL

DETAILED ACTION

Election/Restrictions

1. The examiner acknowledges the election of species III pertaining to claims 73, 87-116 drawn to a discharge tank connected to a fuel cell and tank system. This election was made on 3/23/2009 with traverse. The request for examination of the other species is found not persuasive because the examiner has fully shown "special technical features" as described in 35 USC 371, PCT Rule 13.1. The burden is shifted to the applicant to prove that the species do not share the same special technical features in order to overcome the restriction requirement. The submitted restriction election and arguments made 3/23/2009 do not address this issue and therefore the examiner holds that the restriction is valid.

The requirement for restriction of Group III pertaining to claims 73, 87-116 contained a typo pertaining to independent claim 116. Species III is 73, 87-115 as stated in the call on April 09, 2009. Claim 116 was correctly grouped into Species IV as evident by the dependant claims being in the correctly listed.

Claim Objections

2. Claims 89 and 113 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s)

in proper dependent form, or rewrite the claim(s) in independent form. These claims are repeat claims of 88 and 90 respectively and therefore should be canceled.

3. Claim 113 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 92-94 recite the limitation "collector body". There is insufficient antecedent basis for this limitation in the claim.

6. Claim 94 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. To overcome this rejection, the applicant needs to clarify the structural limitations that would allow for higher control at the "collector body" over the used liquid fuel.

7. Claims 98-99 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention. To overcome this rejection, the applicant needs to clarify what part other than the discharge port is hermetically closed.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claim 63 is rejected under 35 U.S.C. 102(b) as being anticipated by Yonetsu et al (USPAT 6,506,513).

Claim 63 is rejected as stated in the election requirement wherein Yonetsu teaches a fuel cell with an electrolyte membrane sandwiched between a fuel electrode and an oxidant electrode (air). A fuel tank is attached to this fuel cell and utilizes capillary action to introduce fuel into the unit cell [Abstract; Col 4 Ln 26-65]. Figure 14 shows a plurality of unit cells (2) in the system. The fuel tank and fuel cell are hermetically sealed [Col 3 Ln 12].

10. Claims 63, 73. 87-95, 97-99 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamada et al (USPAT 5,364,711).

FIG. 22

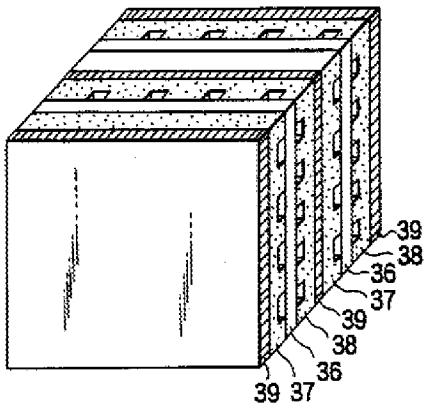
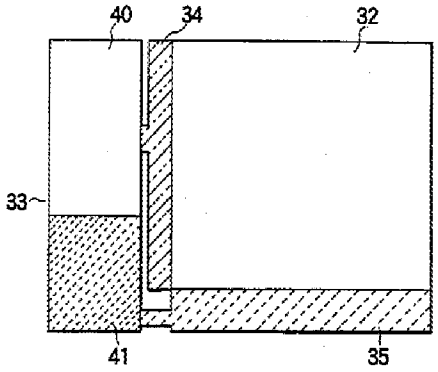


FIG. 23



Claims 63, 73, 87-89, 98 are rejected by Yamada teaching a plural electrolyte cell (32) as shown in Figure 22 comprising an electrolyte layer (36), oxidizing (air) electrode (38), and fuel electrode (37). A cartridge (33) is depicted in Figure 23 to include a fuel storage area (40) and water-storage (used fuel) area (41) wherein the fuel transfers from the cartridge to the cell via a fuel diffusion chamber (34) and from the cell to the water-storage area via a water-recovery chamber (35). The capillary materials are taught to be porous materials or fibers [Col 18 Ln34-51] wherein the fibers create a porous material and therefore read on a porous material and fiber material. The fuel diffusion chamber and water-recovery chamber use organic or inorganic fiber wicks to move the fuel/water by capillary motion through the cell [Col 37 Ln 50-Col 38 Ln 54]. The examiner goes on official notice that the fuel tank and fuel lines as presented by Yamada would be sealed to keep contaminants out of the fuel.

Claim 90 and 91 are rejected by the teaching of the water-retaining wick (41) having a smaller average pore diameter than the water-recovery wick (35) [Col 38 Ln

25-28]. It is taught that the smaller the average pore diameter, the increase in capillary force [Col 39 Ln 1-15]. It is also taught to have the force increase from fuel reservoir area (40) to water-recovery area (41) [Col 39 Ln 29-38].

Claim 92 is rejected by the teaching of the water-recovery wick chamber (35) that acts as a "collector body" [Figure 23]. The discharge mechanism for transfer of water is variation in wick average pore diameter [Col 38 Ln 25-28] as well as a fan, piezoelectric, or heating means [Col 40 Ln 24-49].

Claim 93 defines the product by how the product was made. Thus, claim 93 is a product-by-process claim. For purposes of examination, product-by-process claims are not limited to the manipulation of the recited steps, only the structure implied by the steps. See MPEP 2113. In the present case, the recited steps imply an element capable of acting as a collector body for water (used fuel). The reference suggests such a product, element 35 [Figure 23].

Claim 94 is rejected by the teaching of controlling the specific surface area of all average pore diameters in order to control capillary motion throughout the system of Figure 23 [Col 39 Ln 29-37].

Claim 95 is rejected by the teaching of the fuel tank and water tank (used fuel) being detachable from the fuel cell [Col 38 Ln 54-69].

Claims 97 and 99 are rejected by the teaching of methanol as a liquid fuel [Col 38 Ln 3].

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claim 96 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al (USPAT 5,364,711) as applied to claim 87 above, and further in view of Yonetsu et al. (USPAT 6,506,513).

Yamada teaches a fuel cell and tank system as instantly claimed wherein the system has a vapor discharge valve (43) [Col 40 Ln 37), but fails to teach the used liquid fuel storing tank having an open-able and close-able cover.

Yonetsu teaches open-able/close-able cover (9 Figure 3). One of ordinary skill in the art would know to use the teaching of Yonetsu to modify Yamada because Yonetsu teaches the importance of adjusting the internal pressure of the fuel tank for a fuel cell [Col 5 Ln 46-Col 6 Ln 5] as well as producing a tank that is refillable [Figure 15; Col 12 Ln 7].

13. Claims 100-115 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al (USPAT 5,364,711) and Yonetsu et al. (USPAT 6,506,513).

Claims 100-102, 109, 112-114 is rejected by Yamada teaching a plural electrolyte cell (32) as shown in Figure 22 comprising an electrolyte layer (36), oxidizing (air) electrode (38), and fuel electrode (37). A cartridge (33) is depicted in Figure 23 to

include a fuel storage area (40) and water-storage (used fuel) area (41) wherein the fuel transfers from the cartridge to the cell via a fuel diffusion chamber (34) and from the cell to the water-storage area via a water-recovery chamber (35). The capillary materials are taught to be porous materials or fibers [Col 18 Ln34-51] wherein the fibers create a porous material and therefore read on a porous material and fiber material. The fuel diffusion chamber and water-recovery chamber use organic or inorganic fiber wicks to move the fuel/water by capillary motion through the cell [Col 37 Ln 50-Col 38 Ln 54]. The examiner goes on official notice that the fuel tank and fuel lines as presented by Yamada would be sealed to keep contaminants out of the fuel. Yamada fails to teach an opening in the storing tank.

Yonetsu teaches open-able/close-able cover (9 Figure 3). One of ordinary skill in the art would know to use the teaching of Yonetsu to modify Yamada because Yonetsu teaches the importance of adjusting the internal pressure of the fuel tank for a fuel cell [Col 5 Ln 46-Col 6 Ln 5] as well as producing a tank that is refillable [Figure 15; Col 12 Ln 7].

Claims 103 & 104 are rejected by Yamada teaching the water-retaining wick (41) having a smaller average pore diameter than the water-recovery wick (35) [Col 38 Ln 25-28]. It is taught that the smaller the average pore diameter, the increase in capillary force [Col 39 Ln 1-15]. It is also taught to have the force increase from fuel reservoir area (40) to water-recovery area (41) [Col 39 Ln 29-38].

Claim 105 is rejected by Yamada teaching the water-recovery wick chamber (35) that acts as a “collector body” [Figure 23]. The discharge mechanism for transfer of

water is variation in wick average pore diameter [Col 38 Ln 25-28] as well as a fan, piezoelectric, or heating means [Col 40 Ln 24-49].

Claim 106 defines the product by how the product was made. Thus, claim 93 is a product-by-process claim. For purposes of examination, product-by-process claims are not limited to the manipulation of the recited steps, only the structure implied by the steps. See MPEP 2113. In the present case, the recited steps imply an element capable of acting as a collector body for water (used fuel). The reference suggests such a product, element 35 [Figure 23].

Claim 107 is rejected by Yamada teaching controlling the specific surface area of all average pore diameters in order to control capillary motion throughout the system of Figure 23 [Col 39 Ln 29-37].

Claim 108 is rejected by Yamada teaching the fuel tank and water tank (used fuel) being detachable from the fuel cell [Col 38 Ln 54-69].

Claim 110 is rejected by Yonetsu teaching a small aperture part (6) [Col 6 Ln 3].

Claims 111 and 115 are rejected by Yamada teaching methanol as a liquid fuel [Col 38 Ln 3].

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHEN YANCHUK whose telephone number is (571)270-7343. The examiner can normally be reached on Monday through Thursday 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/STEPHEN YANCHUK/
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795